ASP+ Tips And Tricks

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Professional Developers Conference
the defining point

Agenda

- Goal: Demonstrate a host of ASP+ tips and tricks for building great Web Apps
  - Walkthrough instructions available for download on newsgroups & Post CD
- Four Themes:
  - Deploying Web Applications
  - Debugging Web Applications
  - Running Web Applications
  - Miscellaneous other stuff I think is

Deploying Web Applications

Deploying Web Applications

- Goal: Enable a web app to be deployed simply by copying its bits to the server
- No-nonsense architecture
  - No admin or registration utilities required
  - No local server access required
  - No web server restarts required
- Must work for all web app resources
  - Web Pages/ Web Services

Improved Code Deployment

- Simple deployment for components
  - Just xcopy/ftp to an application's "\bin" dir
  - No registration required (no more regsvr32)
- Each web app is isolated from other apps
  - Components can be private to application
  - Other apps cannot load private components

Code Registration Steps

1. Compile code into a .Net Library
   - csc.exe /target:library MyClass.cs
   - vbc.exe /target:library MyClass.vb
2. Copy DLL into “bin” dir immediately under the application VRoot
   - copy MyClass.dll \wwwroot\bin\
3. Create and use class from any ASP+ page, service or other components

Code Uninstall Steps

1. Delete Library from “bin”dir
   - del MyClass.dll

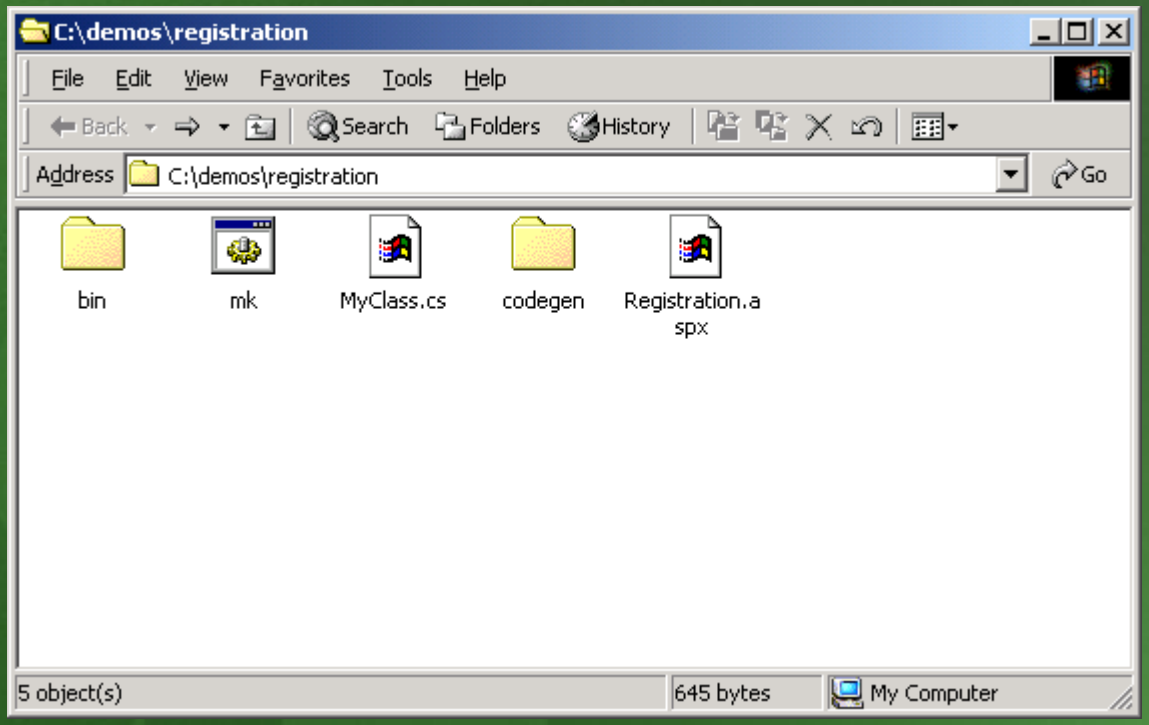
Dynamic Code Update

- It is now possible to dynamically update compiled DLLs on a server
  - No more locked dlls
  - No admin tool required
  - No utility programs required
  - No configuration changes required
  - It just works….
- Just use xcopy, ftp, dav or frontpage to copy new DLL on top of old one

Dynamic Code Update Steps

1. Deploy original .Net Library DLL into application's "bin" directory
2. Use .Net component somewhere within an ASP+ Application
3. Make a source change to the .Net Library DLL and recompile it
4. Copy it again into the app's "bin" directory – notice app starts using it

Code Registration Demos



XML Configuration

- **Goal: Provide *extensible* configuration for *admins & developers* to *hierarchically* apply settings for an *application***
- **Configuration data stored in XML text files**
  - **Format is human-readable and human-writable**
- **Config data can be stored in app directories**
  - **Config system automatically detects changes**

Session State Configuration

- Session State is config.web friendly
  - Timeouts
  - External State Store (more on later)
  - Cookieless session state tracking option

Cookieless Sessions

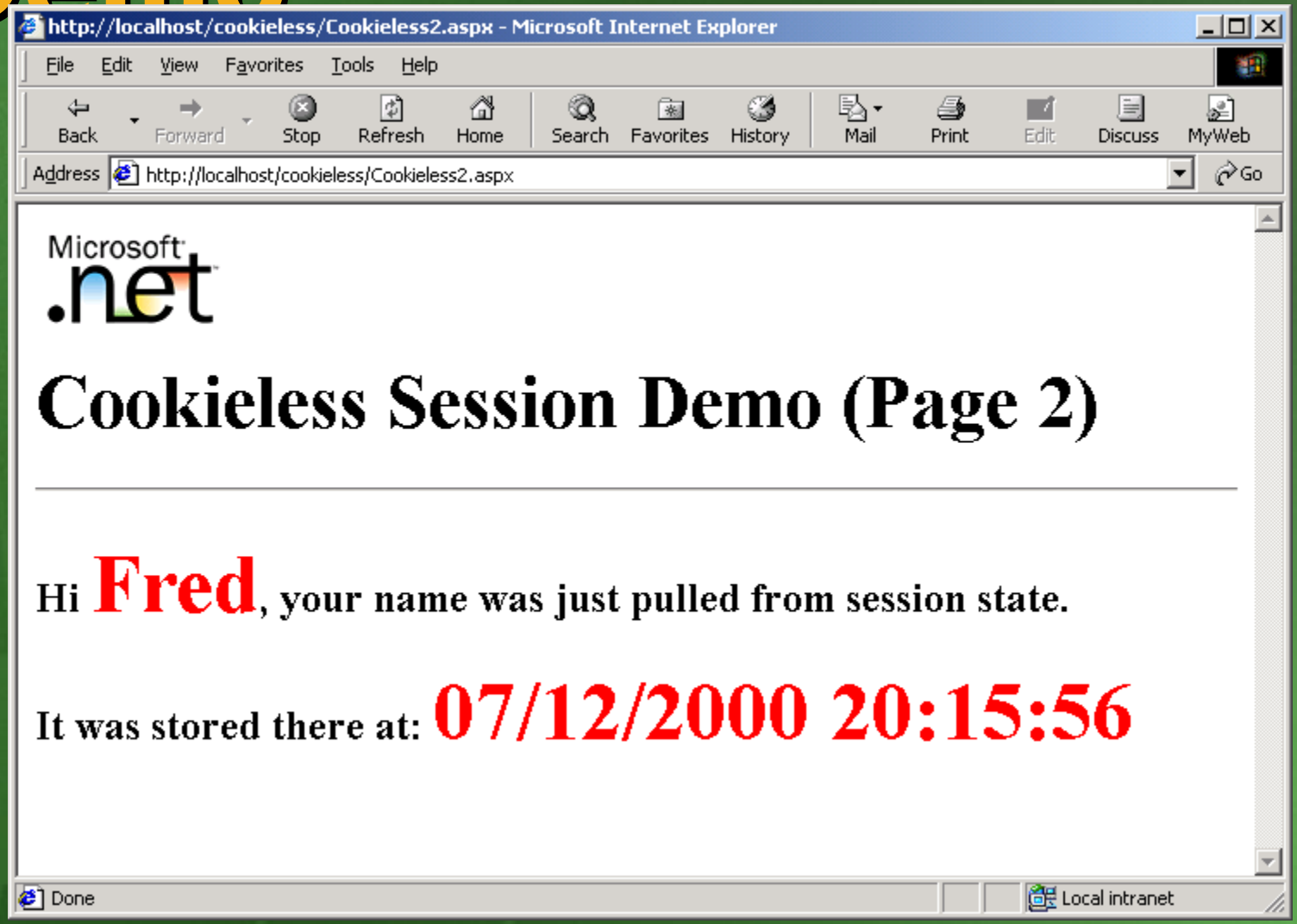
- Session State no longer requires client cookie support for SessionID
  - Can optionally track SessionID in URL
- Can require no code changes to app
  - All relative links continue to work

Cookieless Sessions Steps

1. Create “config.web” file in app vroot
2. Add following text:

```
<configuration>
    <sessionstate cookieless=“true”/>
</configuration>
```

Cookieless Session Demo



App Settings

- Application specific settings can also now be stored in config.web files
  - Enables devs to avoid hard-coding them
  - Administrators can later change them
- Examples:
  - Database DSN Settings
  - File Locations

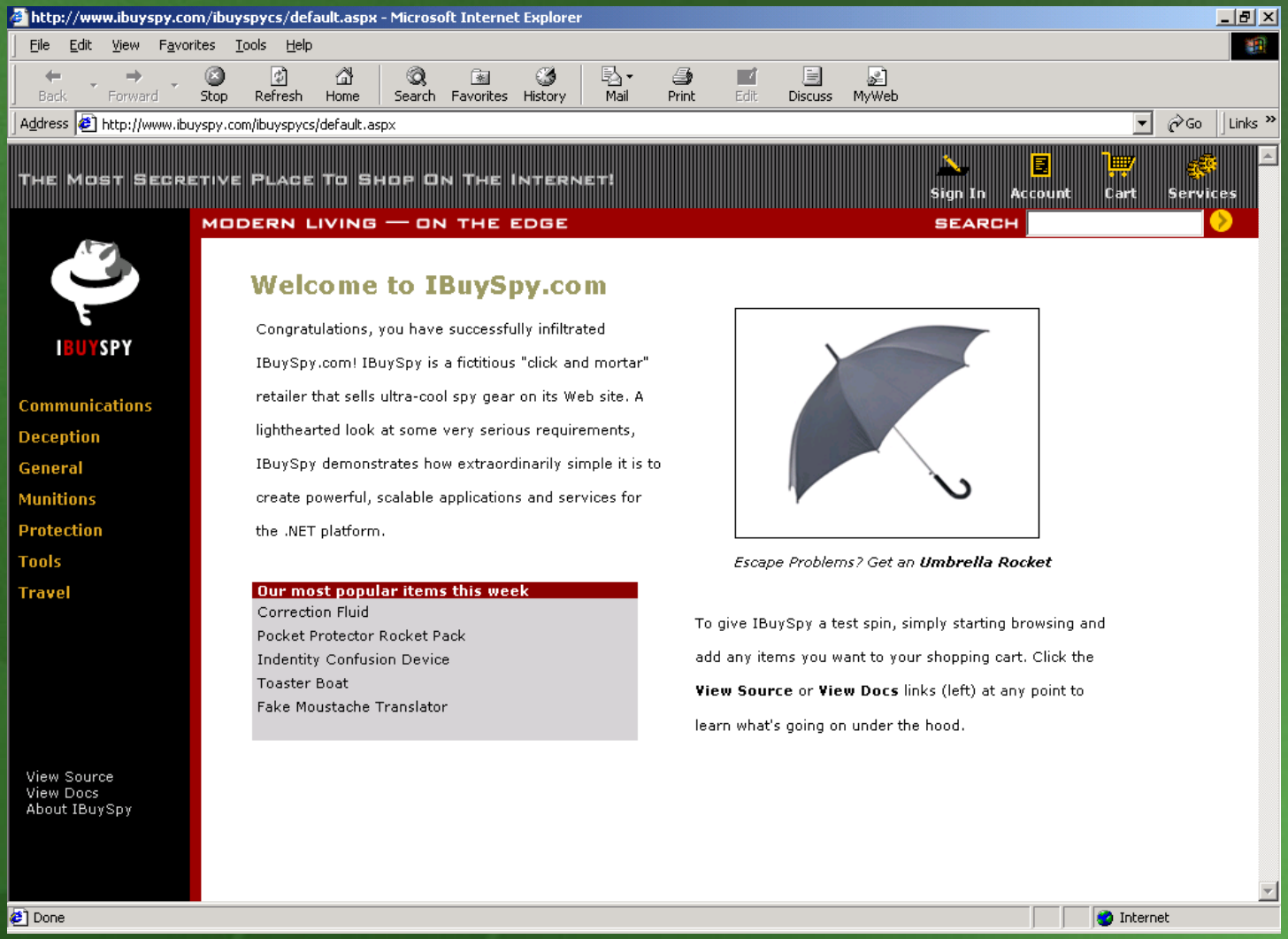
App Settings Steps

1. Create “config.web” file in app vroot:

```
<configuration>
    <appsettings>
        <add key=“dsn”
value=“localhost;uid=sa;pwd=;Database=foo”/>
    </appsettings>
</configuration>
```

2. Below code returns hashtable of values:
   - Dim Config as HashTable
   - Config = Context.GetConfig(“appsettings”)

App Settings Demo



Debugging Web Applications

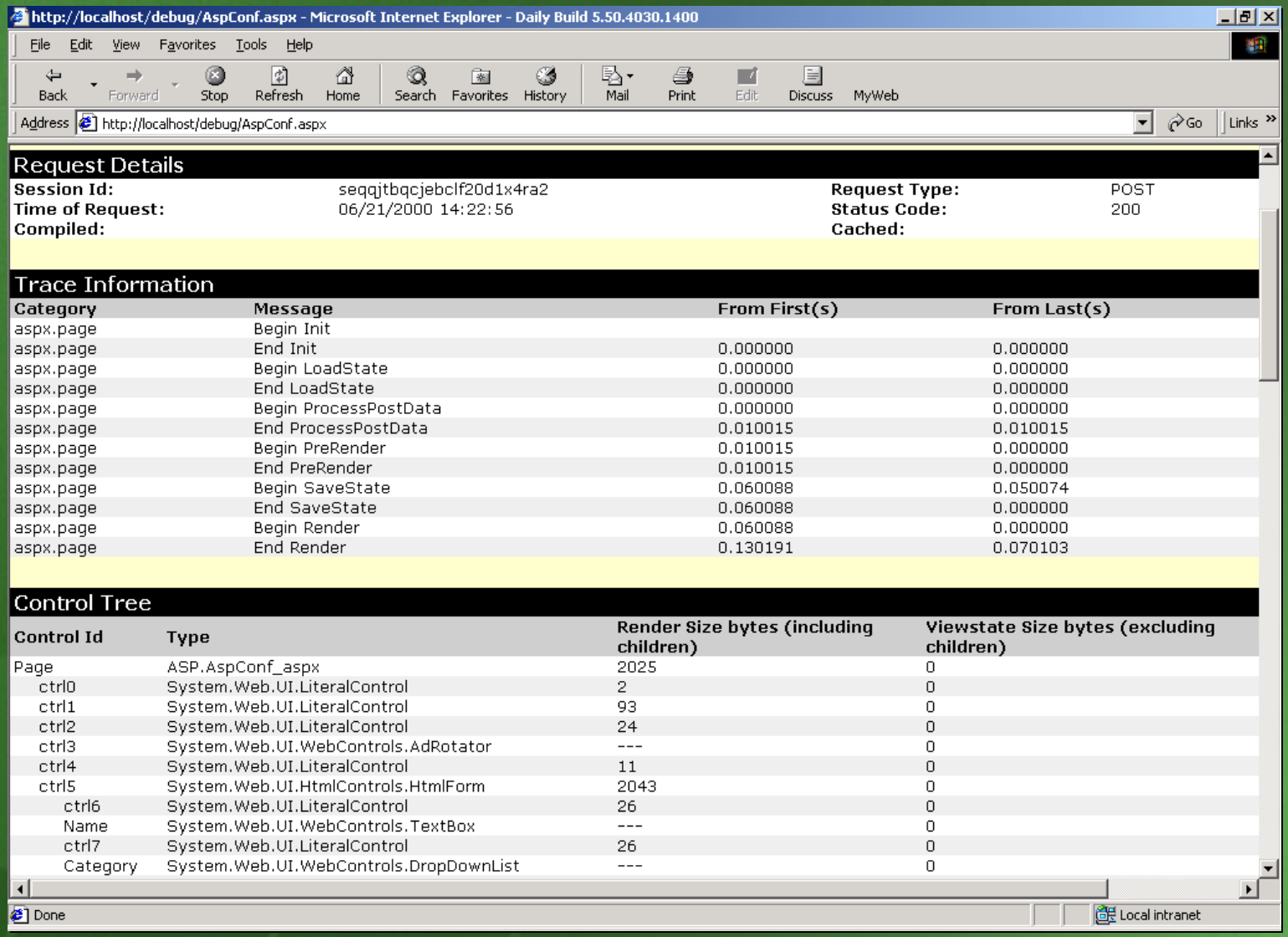
Tracing

- ASP+ supports page and app tracing
  - Easy way to include “debug” statements
  - No more messy Response.Write() calls!
- Great way to collect request details
  - Server control tree
  - Server variables, headers, cookies
  - Form/Querystring parameters

Page Tracing Steps

1. Add trace directive at top of page
   - <%@ Page Trace="True" %>
2. Add trace calls throughout page
   1. Trace.Write("MyApp", "Button Clicked")
   2. Trace.Warn("MyApp", "Value: " + value)
3. Access page from browser

Page Tracing Demo



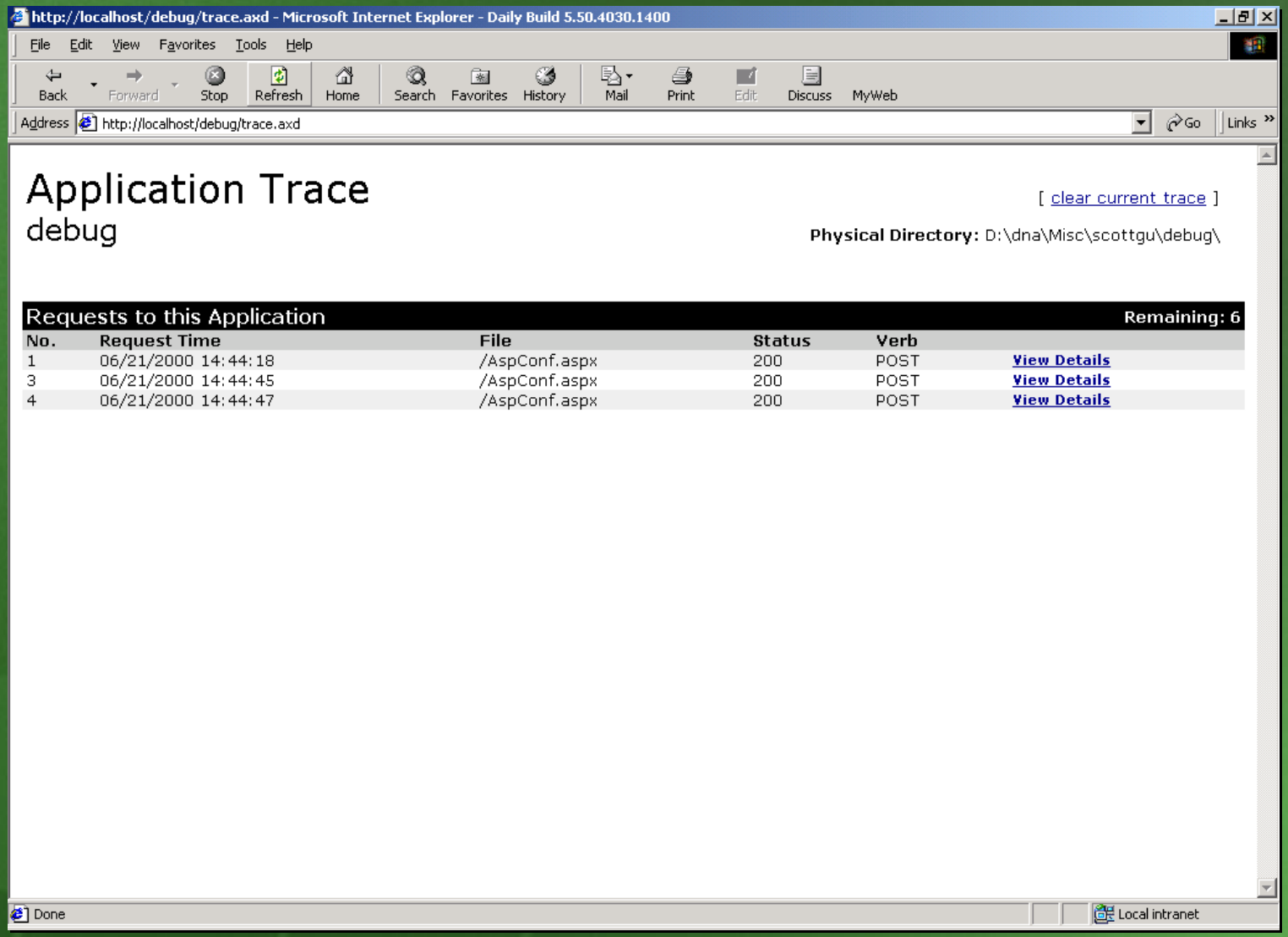
App Tracing Steps

1. Create “config.web” file in app vroot:

```
<configuration>
    <trace enabled=“true” requestlimit=“10”/>
</configuration>
```

2. Access tracing URL within app
   - http://localhost/approot/Trace.axd

App Tracing Demo



Debugging

- Basic Debugger ships with the SDK
  - Multi-language
  - Single stack trace
  - Breaks, watches, etc.
- Visual Studio® Debugger
  - Adds remote debugging support
  - Supports managed/unmanaged debugging

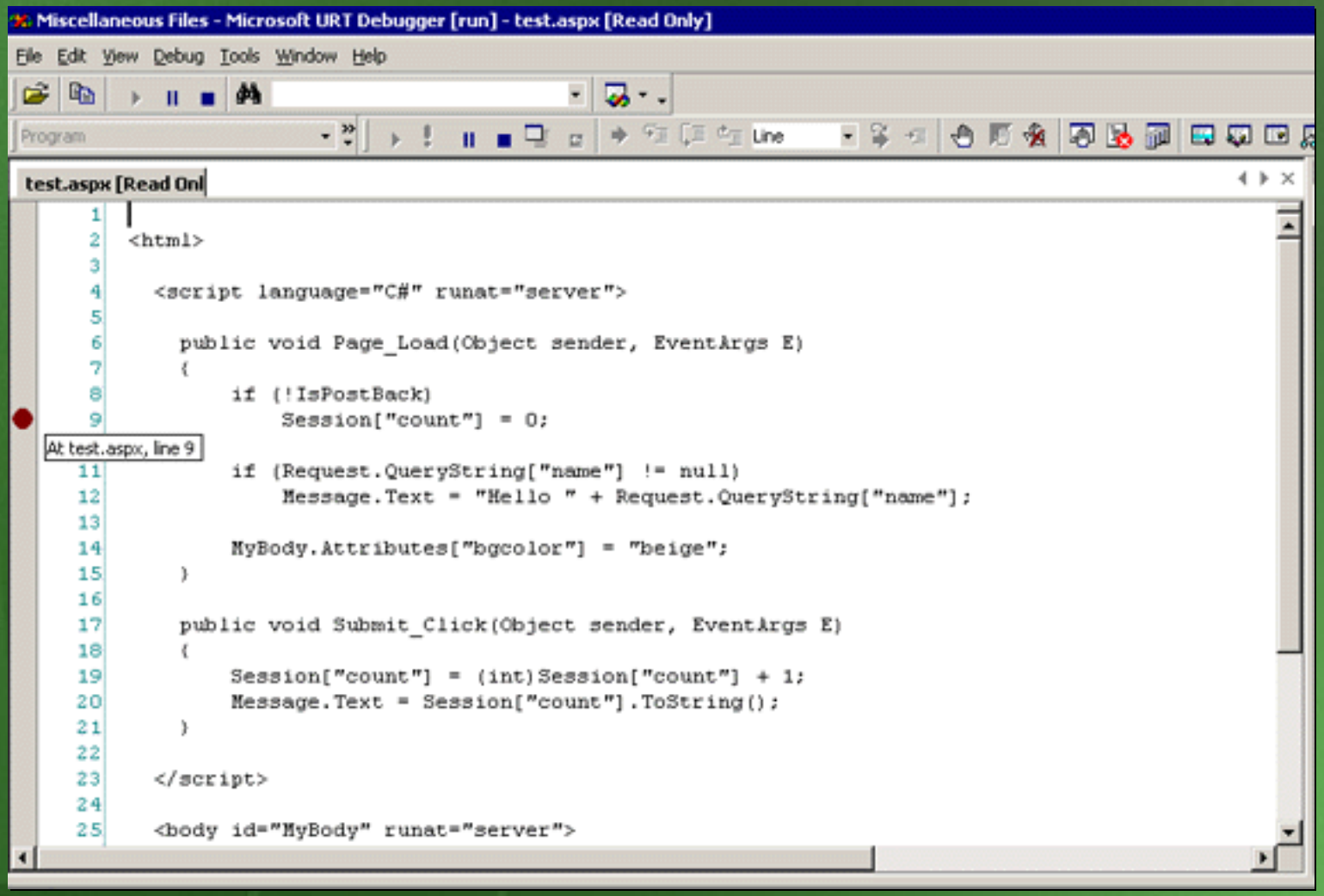
Debugging Steps

1. Create “config.web” file in app vroot:

```
<configuration>
    <compilation debugmode=“true”/>
</configuration>
```

2. Attach using debugger
3. Set breakpoints
4. Hit page or service

Debugger Demo



Error Handling

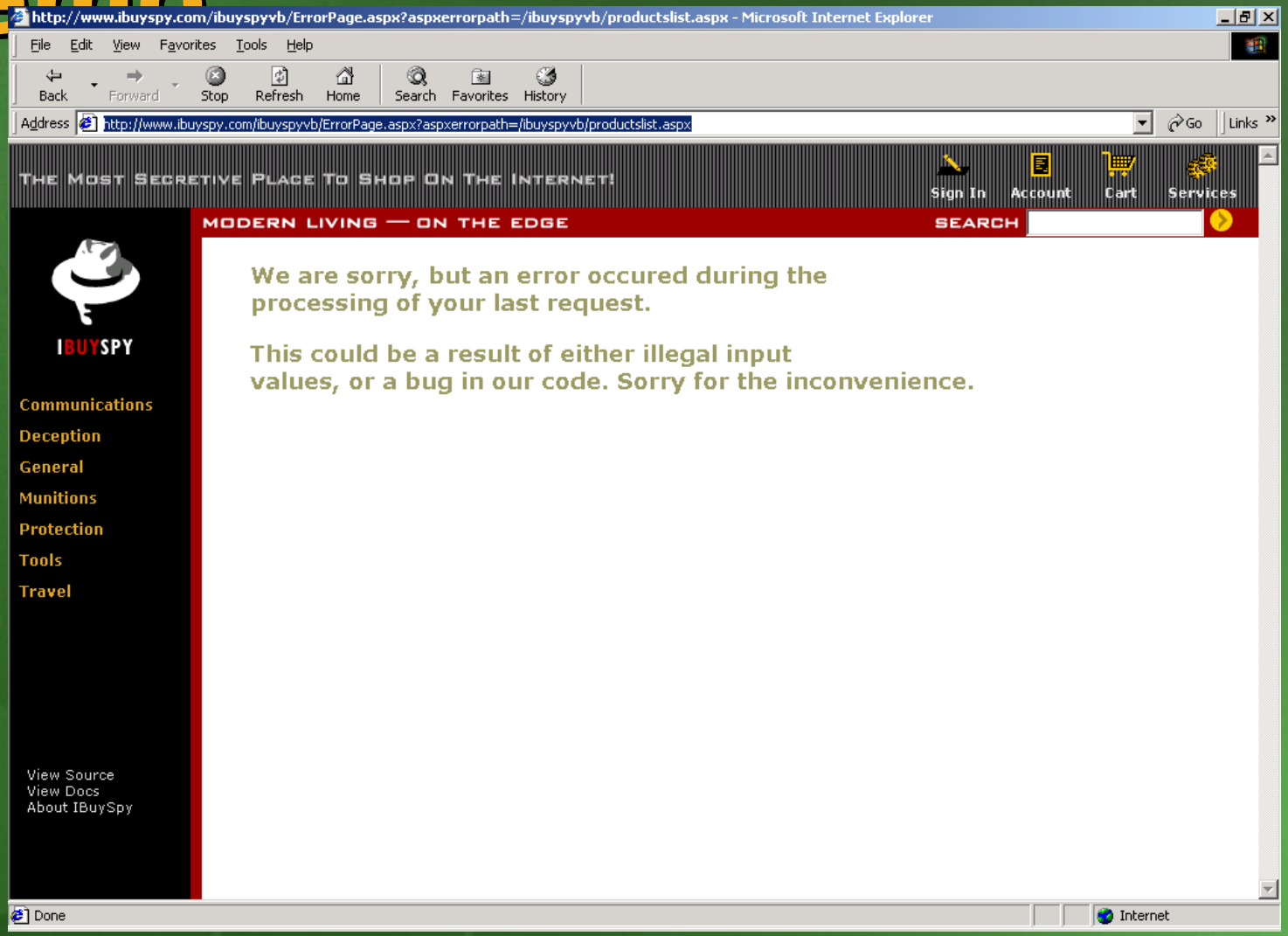
- .Net Common Language Runtime provides unified exception architecture
  - Runtime errors done using exceptions
  - VB now supports try/catch/finally
- ASP+ also provides declarative application custom error handling
  - Automatically redirect users to error page when unhandled exceptions occur

Custom Error Page Steps

1. Create “config.web” file in app vroot:

```
<configuration>
    <customerrors mode=“remoteonly” defaultredirect=“error.htm”>
        <error statuscode=“404” redirect=“adminmessage.htm”/>
        <error statuscode=“403” redirect=“noaccessallowed.htm”/>
    </customerrors>
</configuration>
```

Custom Error Pages Demo



Application_Error

- Global application event raised if unhandled exception occurs
  - Provides access to current Request
  - Provides access to Exception object
- Cool Tip:
  - Use new EventLog class to write custom events to log when errors occur
  - Use new SmtpMail class to send email to administrators

Writing to the NT Event Log

```
<%@ Import Namespace="System.Diagnostics" %>
<%@ Assembly name="System.Diagnostics" %>

<script language="VB" runat=server>

    Public Sub Application_Error(Sender as Object, E as EventArgs)

        Dim LogName As String = "MyCustomAppLog"
        Dim Message As String = "Url " & Request.Path & " Error: " &
Me.Error.ToString()

        ' Create Event Log if It Doesn't Exist
        If (Not EventLog.SourceExists(LogName)) Then
           EventLog.CreateEventSource(LogName, LogName)
        End if

        ' Fire off to Event Log
        Dim Log as New EventLog
        Log.Source = LogName
        Log.WriteEntry(Message, EventLogEntryType.Error)

    End Sub

</script>
```

Sending SMTP Mail

```
<%@ Import Namespace="System.Web.Util" %>

<script language="VB" runat=server>

    Public Sub Application_Error(Sender as Object, E as EventArgs)

        Dim MyMessage as New MailMessage

        MyMessage.To = "scottgu@microsoft.com"
        MyMessage.From = "MyAppServer"
        MyMessage.Subject = "Unhandled Error!!!"
        MyMessage.BodyFormat = MailFormat.Html

        MyMessage.Body = "<html><body><h1>" & Request.Path &
"</h1>" &
                                 Me.Error.ToString() & "</body></html>"

        SmtpMail.Send(MyMessage)

    End Sub

</script>
```

Running Web Applications

Process Model Recovery

- ASP+ runs code in an external worker process – xspwp.exe
  - Automatic AV/Crash Protection
- It is also now possible to configure ASP+ worker process to recover from:
  - Memory Leaks
  - Deadlocks

Handling Deadlocks

1. Open root system configuration file
   - C:\WIN2000\ComPlus\ v2000.14.1812
2. Edit <iisprocessmodel> settings:

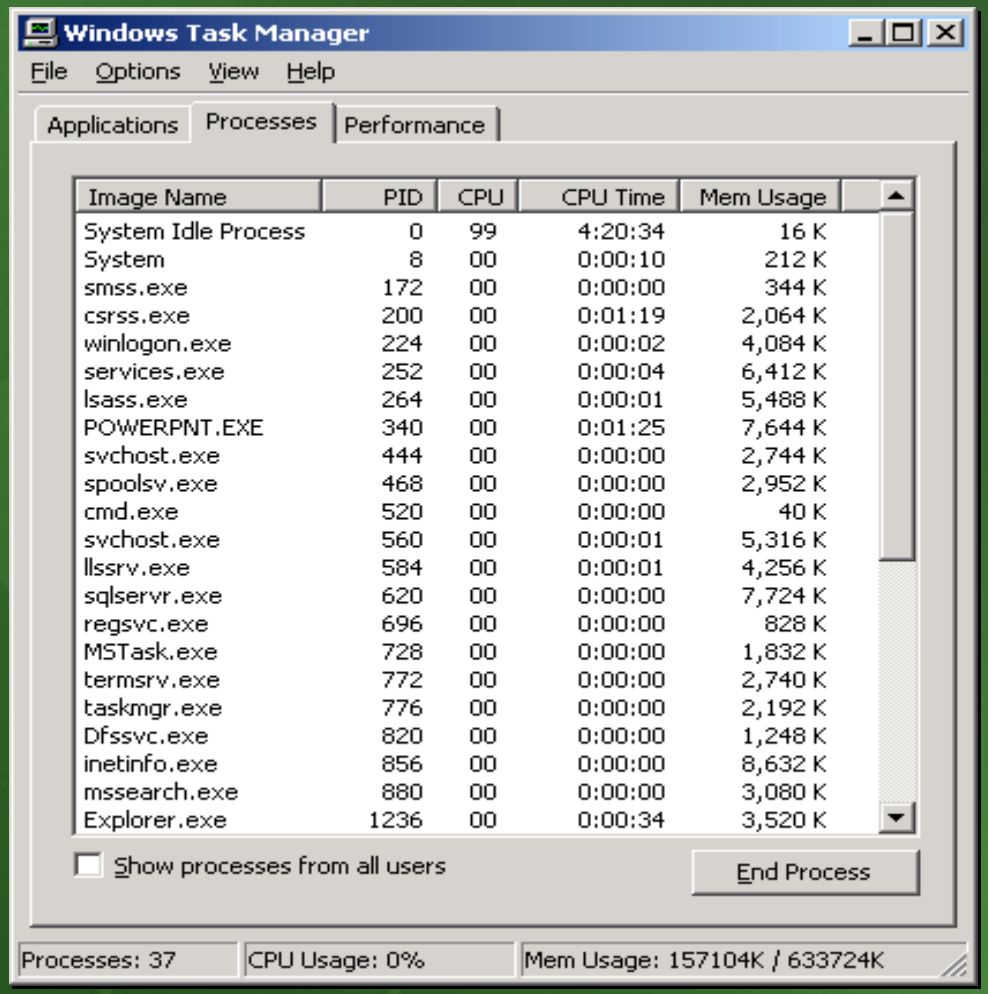
```
<iisprocessmodel
    requestqueuelimit="500"
/>
```

Handling Memory Leaks

1. Open root system configuration file
   - C:\WIN2000\ComPlus\ v2000.14.1812
2. Edit <iisprocessmodel> settings:

```
<iisprocessmodel
    memorylimit="75"
/>
```

Process Model Demo



Pre-emptive cycling

- ASP+ optionally supports pre-emptive cycling of worker processes
  - Eliminates need for admins to “kick the server” once a week
- Can be configured two ways:
  - Time Based (reset every m minutes)
  - Request Based (reset every n requests)

Timer Cycling

1. Open root system configuration file
   - C:\WIN2000\ComPlus\ v2000.14.1812
2. Edit <iisprocessmodel> settings:

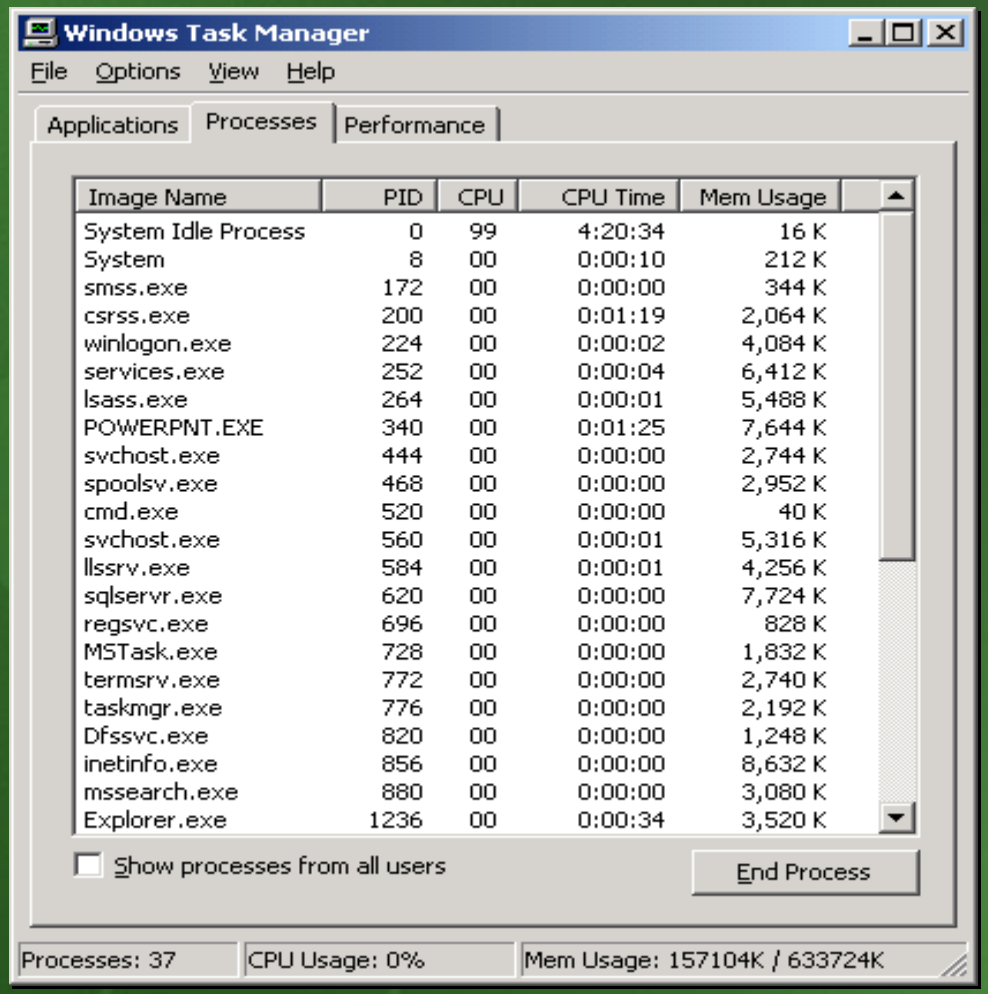
```
<iisprocessmodel
    timeout=“60”
/>
```

Request Cycling

1. Open root system configuration file
   - C:\WIN2000\ComPlus\ v2000.14.1812
2. Edit <iisprocessmodel> settings:

```
<iisprocessmodel
    requestlimit="10000"
/>
```

Process Model Demo



Persistent Compiles

- ASP+ saves dynamic compilations (.ASPX, .ASMX) to disk
  - Avoids recompile on process startup
  - No special tool or instructions required
- Should dramatically improve startup time on large applications
- Caveat:

Reliable Session State

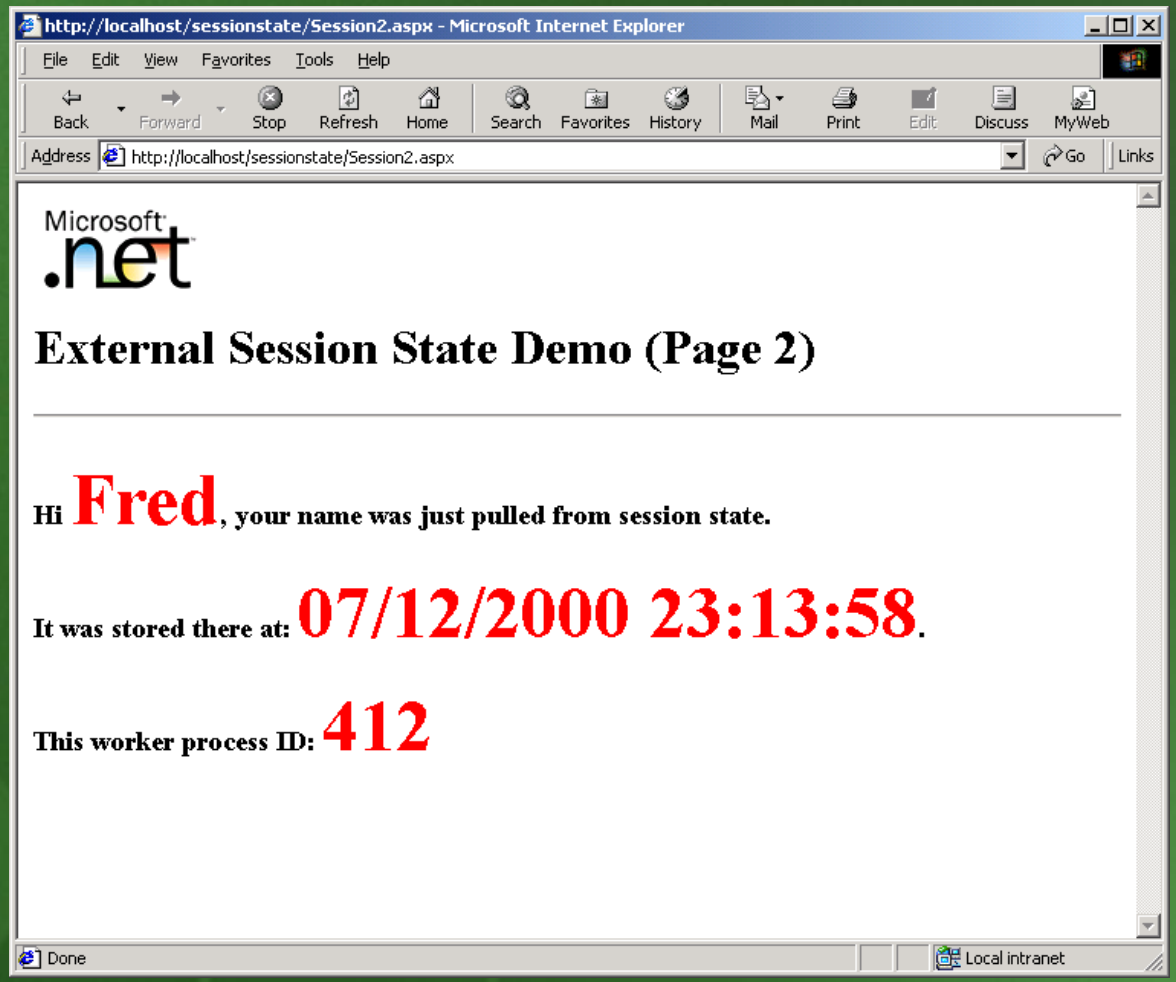
- Session State can now be external from ASP+ Worker Process
  - ASPState Windows NT Service
  - SQL Server™
- Big reliability wins
  - Session state survives crashes/restarts
- Enables Web farm deployment
  - Multiple FE machines point to a common state store

External Session State Steps

1. Start ASP State Service on a machine
   - net start aspstate
2. Create “config.web” file in app vroot, and point it at state service machine:

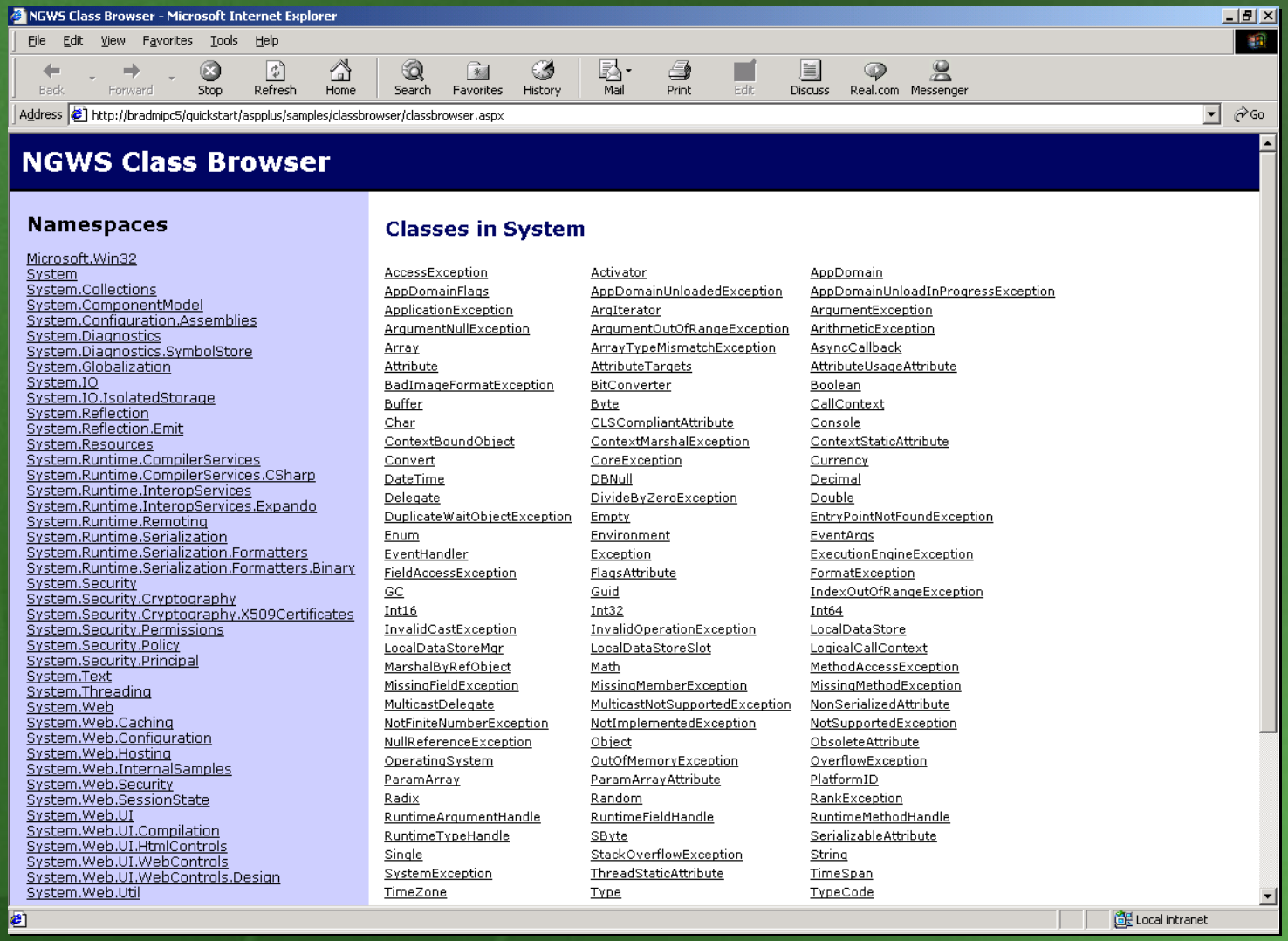
```
<configuration>
    <sessionstate inproc=“false” server=“localhost” />
</configuration>
```

External Session State Demo



Miscellaneous Other Fun Things

ClassBrowser



File Upload

- ASP+ provides file upload support
  - Request.Files collection
  - <input type=file> server control
- HttpPostedFile class
  - HttpPostedFile.InputStream
  - HttpPostedFile.ContentLength
  - HttpPostedFile.ContentType
  - HttpPostedFile.FileName
  - HttpPostedFile.SaveAs(fileLocation)

File Upload Example

```
<html>

  <script language="VB" runat=server>

    Sub UploadBtn_Click(Sender as Object, E as EventArgs)
      UploadFile.PostedFile.SaveAs("c:\foo.txt")
    End Sub

  </script>

  <body>

    <form enctype="multipart/form-data" runat=server>

      Select File To Upload: <input id="UploadFile" type=file
runat=server>
      <asp:button Text=“Upload!” OnClick="UploadBtn_Click"
runat=server/>

    </form>

  </body>
```

Image Generation

- System.Drawing can perform rich server image generation/manipulation
  - Image Generation
  - Overlays on top of existing images
  - Resizing/Cropping images
  - Read/Write Any Standard IO Stream

Image Generation Demo

Summary

- Hundreds of cool features to use when building ASP+ Web Applications
  - Only a small sampling shown here…
- For more information/samples please review the ASP+ Quickstart
  - 400+ samples that can be run online
- For a good “best practices” reference application, please

Other Information Sources

- Please review the ASP+ hands on tutorial
  - Photo album sample walkthrough
- Public ASP+ Community Sites:
  - www.learnasp.com
  - www.aspng.com
  - www.asp101.com
  - www.aspfree.com

Server Side Comments

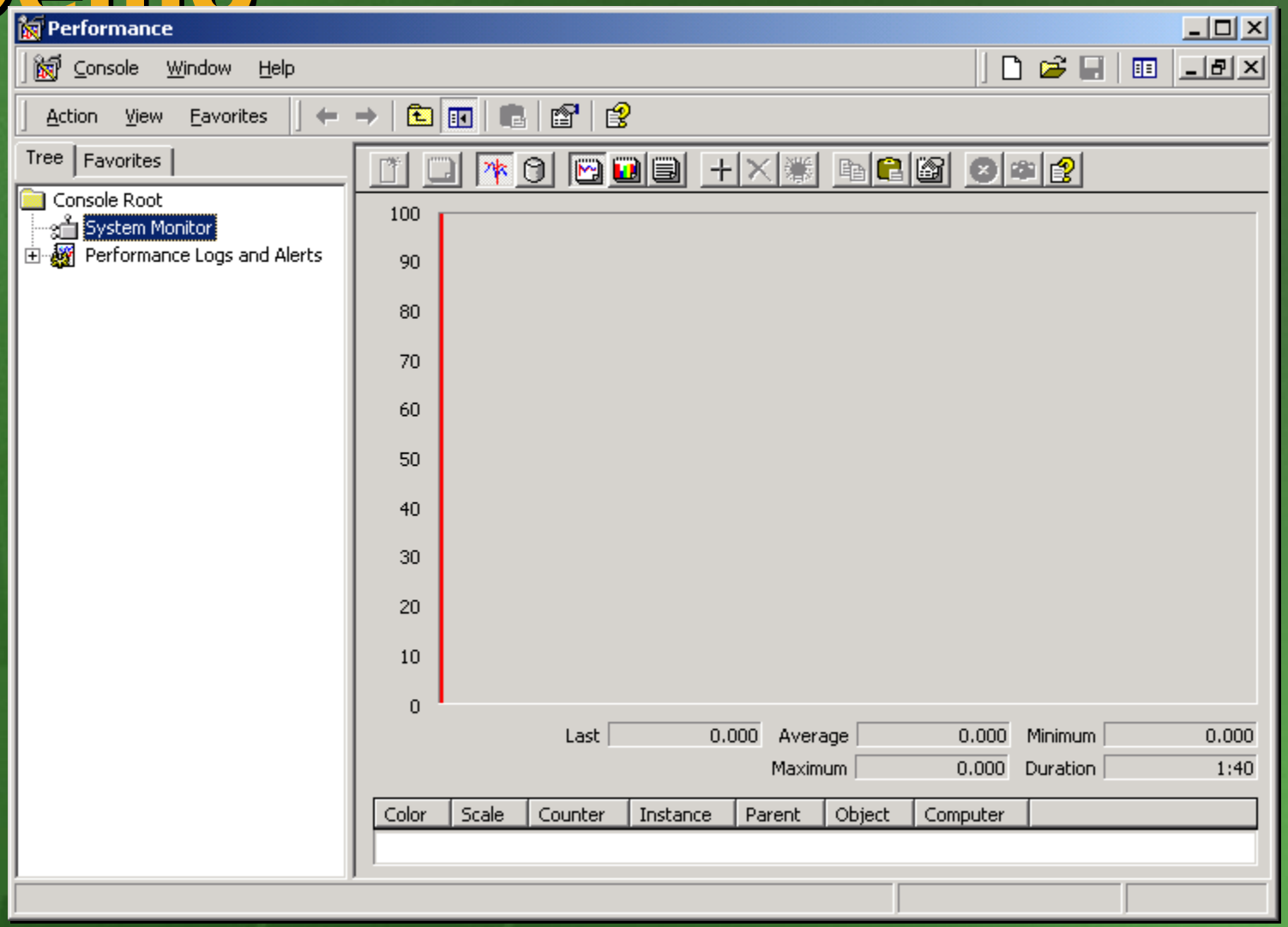
- ASP+ supports server-side comments
  - <%-- Omit Me --%>
  - Useful development tool
- Example:

```
<%--
    Some random text….
    <asp:calendar id="MyCal"
runat=server/>
    <%= Now %>
--%>
```

Performance Counters

- Per Application Performance Counters
  - Now possible to easily identify how individual applications are functioning
- Custom Performance Counters APIs
  - Now possible to publish unique app-specific performance data
  - Example: total orders, orders/sec

Performance Counter Demo



Discussion

Where do you want to go today?

Microsoft